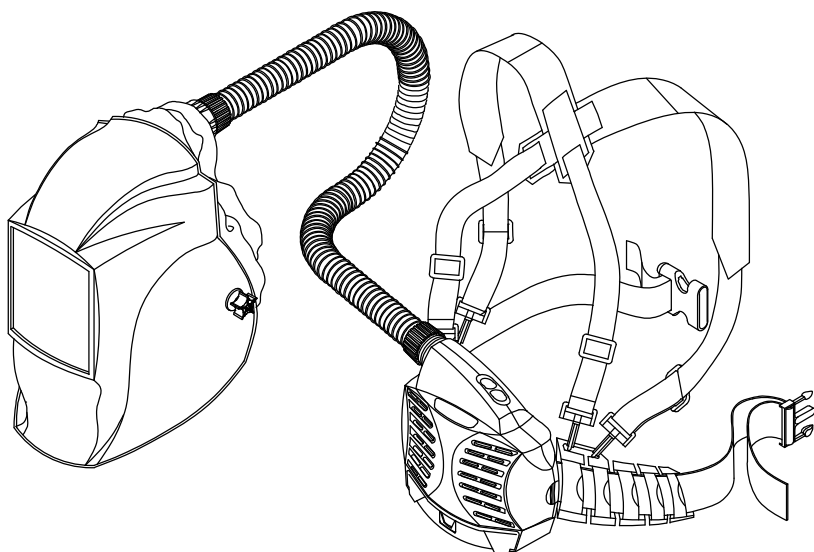




OM-235 936C

2011-02

Auto-Darkening Helmets Model: Powered Air-Purifying Respirator (PAPR)



To help us serve you better, go to www.MillerWelds.Com/HelmetReg/

TABLE OF CONTENTS

SECTION 1 – PAPR SAFETY PRECAUTIONS –READ BEFORE USING	1
1-1. Symbol Usage	1
1-2. Arc Welding Hazards	1
1-3. NIOSH Approval Information	4
1-4. Proposition 65 Warnings	5
SECTION 2 – POWERED AIR-PURIFYING RESPIRATOR (PAPR)	6
2-1. Respirator Specifications	6
2-2. Charging The Battery	7
2-3. Installing The Battery	8
2-4. Installing The Air Filter	9
2-5. Attaching The Connecting Hose	10
2-6. Operating The Controls	11
2-7. Testing Air Flow	12
2-8. Testing Air Flow Alarm	13
2-9. Installing Shoulder Strap	14
2-10. Checking The Respirator Before Use	15
2-11. Putting On The Respirator	16
2-12. Maintenance And Storage	17
2-13. Respirator Troubleshooting	17
SECTION 3 – AUTO-DARKENING HELMET	19
3-1. Specifications	19
3-2. Helmet Controls	20
3-3. Reset Button And Low Battery Indicator	21
3-4. Lens Delay Control	21
3-5. Variable Shade Control (No. 8 – 13)	22
3-6. Sensitivity Control	23
3-7. Adjusting Headgear On Standard Models	24
3-8. Replacing The Lens Covers On Standard Elite Helmets	25
3-9. Replacing Grinding Shield On Titanium 9400i Helmet	26
3-10. Replacing The Battery	27
3-11. Installing Optional Magnifying Lens	28
3-12. Maintenance	28
3-13. Troubleshooting	29
SECTION 4 – PARTS LIST	30
WARRANTY	

SECTION 1 – PAPR SAFETY PRECAUTIONS – READ BEFORE USING

PAPR 2010-03

 **Protect yourself and others from injury — read and follow these precautions.**

1-1. Symbol Usage



DANGER! – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

 Indicates special instructions.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.

This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

NOTICE – Indicates statements not related to personal injury.

1-2. Arc Welding Hazards



Only qualified persons should install, operate, maintain, and repair this unit.



ARC RAYS can burn eyes and skin.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards). Refer to Shade and Sensitivity charts.
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare, and sparks; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, and wool) and foot protection.
- Before welding, adjust the auto-darkening lens sensitivity setting to meet the application.
- Stop welding immediately if the auto-darkening lens does not darken when the arc is struck. See the Owner's Manual for more information.



WELDING HELMETS do not provide unlimited eye, ear and face protection.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

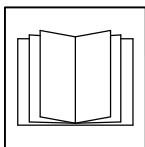
- Use impact resistant safety spectacles or goggles and ear protection at all times when using this welding helmet.
- Do not use this helmet while working with or around explosives or corrosive liquids.
- Do not weld in the overhead position while using this helmet.
- Inspect the auto-lens frequently. Immediately replace any scratched, cracked, or pitted cover lenses or auto-lenses.



NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.



READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing unit. Read the safety information at the beginning of the manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform maintenance and service according to the Owner's Manuals, industry standards, and national, state, and local codes.



FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



RESPIRATOR (PAPR) MISUSE can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Read and follow these instructions and the safety labels carefully. The powered air purifying respirator (PAPR) helps protect the user from specific airborne contaminants but must be used correctly to be fully effective. Have an industrial hygienist test the air in your facility to ensure the PAPR provides adequate protection from contaminants in your environment. If you have questions about the respirator, see equipment NIOSH label and consult your Safety Director and an Industrial Hygienist.
- Follow all applicable ANSI, OSHA, CSA, and other regulatory guidelines pertaining to the use of respirators.
- Do not use the powered air purifying respirator where there is danger of fire or explosion.
- Do not use the powered air purifying respirator in windy conditions or negative pressure inside the hood may draw in contaminants from the outside air.
- Do not use the powered air purifying respirator without a properly installed spark guard. Without the spark guard, welding sparks may ignite the filter or damage the filters and allow unfiltered air into the helmet.
- The powered air purifying respirator does not supply oxygen. Use the respirator only in atmospheres for which it is NIOSH approved. Do not use the respirator where oxygen levels are 19.5% or lower, where contaminant levels are unknown or are immediately dangerous to life or health (IDLH), or where the contaminant levels exceed the respirator specifications.
- Do not enter a hazardous area until you are sure the respirator equipment is correctly assembled, working properly, and properly worn.
- Before each use, inspect the respirator equipment for damage and verify it operates properly. Before using the respirator, test air flow to verify it is providing an adequate volume of air.
- Do not use the powered air purifying respirator without all filter components or with the blower turned off or hazardous levels of oxygen and carbon dioxide may accumulate in the helmet.
- Always wear the powered air purifying respirator when entering a contaminated area. Do not remove the respirator until outside the contaminated area.
- Dangerous contaminants may not smell or be visible. Leave the area immediately if you notice the following:
 - ... Breathing becomes difficult.
 - ... You experience dizziness, impaired vision, or eye, nose, or mouth irritation.
 - ... The powered air purifying respirator alarm sounds.
 - ... The equipment is damaged.
 - ... Air flow decreases or stops.
 - ... If you think the equipment is not supplying adequate protection.Do not remove the equipment until you are in a safe area.
- Do not repair, modify, or disassemble the powered air purifying respirator or use with parts or accessories not supplied by the manufacturer. Use only NIOSH approved components.
- Replace damaged or clogged filters. Do not wash or reuse filters. Do not clean filters by tapping or with compressed air or filter elements may be damaged. Dispose of used filter elements according to local, state, and federal requirements.
- The powered air purifying respirator must be used with the helmet, hood, and filters recommended by the manufacturer to provide a NIOSH-approved respirator system. See the NIOSH label for information on the required equipment.
- Do not use the powered air purifying respirator belt and shoulder straps as a safety harness.
- The powered air purifying respirator contains electrical parts which have not been evaluated as an ignition source in flammable or explosive atmospheres by MSHA/NIOSH.

1-3. NIOSH Approval Information

THIS RESPIRATOR IS APPROVED ONLY IN THE FOLLOWING CONFIGURATION:

TC-	PROTECTION ¹			ALTERNATE HELMET ASSEMBLIES								ACCESSORIES	Caution and Limitation ²
		PART NUMBER	COMPONENT										
21C-0834	HE	X	237708	ELITE HELMET									ABCFULMNOPS
21C-0877	HE	X	247471	9400i HELMET									ABCFULMNOPS
1. PROTECTION: HE-High Efficiency Particulate Air Filter for Powered, Air Purifying Respirators													
2. CAUTIONS AND LIMITATIONS: A - Not for use in atmospheres containing less than 19.5 percent oxygen. B - Not for use in atmospheres immediately dangerous to life or health. C - Do not exceed maximum use concentrations established by regulatory standards. F - Do not use powered air-purifying respirators if airflow is less than four cfm (115 lpm) for tight fitting facepieces or six cfm (170 lpm) for hoods and/or helmets. I - Contains electrical parts that may cause an ignition in flammable or explosive atmospheres. J - Failure to properly use and maintain this product could result in injury or death. L - Follow the manufacturer's User's Instructions for changing cartridges, canister and/or filters. M - All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations. N - Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer O - Refer to User's Instructions, and/or maintenance manuals for information on use and maintenance of these respirators. P - NIOSH does not evaluate respirators for use as surgical masks. S - Special or critical User's Instructions and/or specific use limitations apply. Refer to User's Instructions before donning. S - Special or critical User's Instructions and/or specific use limitations apply. The Air Armor PAPR has been manufactured by OTOS Tech, Co. Ltd. For Miller Electric Mfg. Co. under TC--21C--0834, TC-21C--0877													

1-4. Proposition 65 Warnings

-  Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)
-  This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. *Wash hands after use.*

SECTION 2 – POWERED AIR-PURIFYING RESPIRATOR (PAPR)

 This equipment helps protect the user from certain contaminants. All users must read and understand these instructions and be trained in the proper use of this equipment before using. Use this equipment according to all applicable health and safety standards. If you have questions about the type of respiratory equipment required, consult your safety director and an Industrial Hygienist.

 Do not enter a hazardous area until you are sure the respirator equipment is correctly assembled, working properly, and properly worn.

 See Section 3 for information on the auto-darkening helmet assembly.

The powered air-purifying respirator (PAPR) filters contaminated air and blows it into the welding helmet hood through a flexible connecting hose. The respirator system generates a positive air pressure to help prevent contaminants from entering the hood. The system must include and/or be used with the equipment listed below:

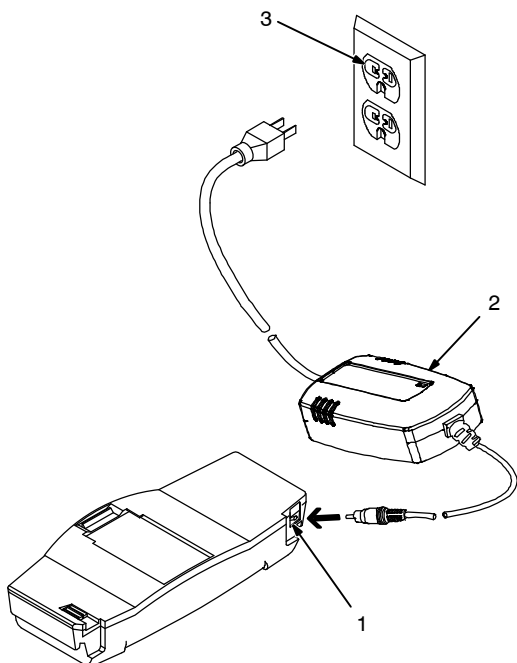
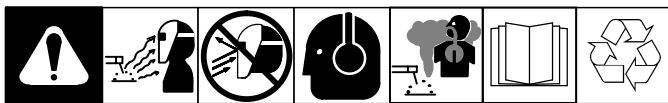
- Helmet with auto-darkening lens, hood, and headgear system
- Connecting hose
- Blower assembly with filtration system (spark guard, foam prefilter, HEPA filter), and low battery and low air flow alarms
- Belt assembly
- Air flow indicator
- Battery charger

The respirator equipment operates at temperatures from 23° to 131° F and provides air flow of 6+ CFM (low speed) to 7.06 CFM (high speed) under normal conditions. Battery life is reduced when the unit is used in a dirty environment. If the system air flow decreases to an unsafe level, an alarm will sound, the blower vibrates, and the Danger light will flash to warn the user to immediately leave the contaminated area. Use the supplied air flow indicator to determine if the unit is supplying adequate amounts of clean air.

2-1. Respirator Specifications

Size (Blower Assembly)	9-1/2 x 8-1/4 x 3 in. (241 x 210 x 76 mm)
Weight (Blower Assembly w/battery and filters)	33.2 oz. (941 g)
Standard Air Filter	NIOSH-approved filter assembly consisting of a spark guard screen, foam prefilter, and particulate (HEPA) filter. Approved to filter particulate down to 0.3 micrometers in size.
Air Flow	Low Speed: 6+ CFM (170+ LPM) minimum High Speed: 7.06 CFM (200 LPM)
Operating Temperature	23° to 131° F (–5° to 55° C)
Storage Temperature	14° to 176° F (–10° to 80° C)
Battery Type	Rechargeable Lithium
Battery Charging Time	About Three hours
Battery Life	500 charges Run time dependent on air flow rate and filter load.
Belt size	28 to 55 in. (711 to 1397 mm)

2-2. Charging The Battery



⚠ Charge battery only with supplied charger in an open, well-ventilated location.

⚠ Do not allow battery to get wet. Do not attempt to open the battery case.

⚠ Keep battery away from fire or heat.

⚠ Charge battery before first use or if battery has not been used for five days.

📖 Dispose of battery at a designated collection facility.

📖 Battery charging stops when battery is fully charged.

1 Battery Terminal

2 120 Volt AC Battery Charger

3 120 Volt AC Receptacle

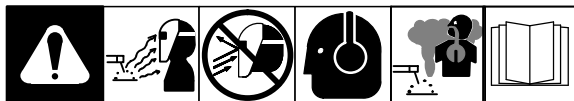
Remove battery from blower assembly. Connect charger cord to battery terminal. Connect charger to 120 volt AC receptacle.

The charger red light goes on when battery is being charged. When fully charged, the charger green light goes on. Charging normally takes about four hours.

📖 If red light flashes during charging, stop charging for 30 minutes then charge battery an additional 20 minutes (green light will be on).

POWERED AIR PURIFYING RESPIRATOR

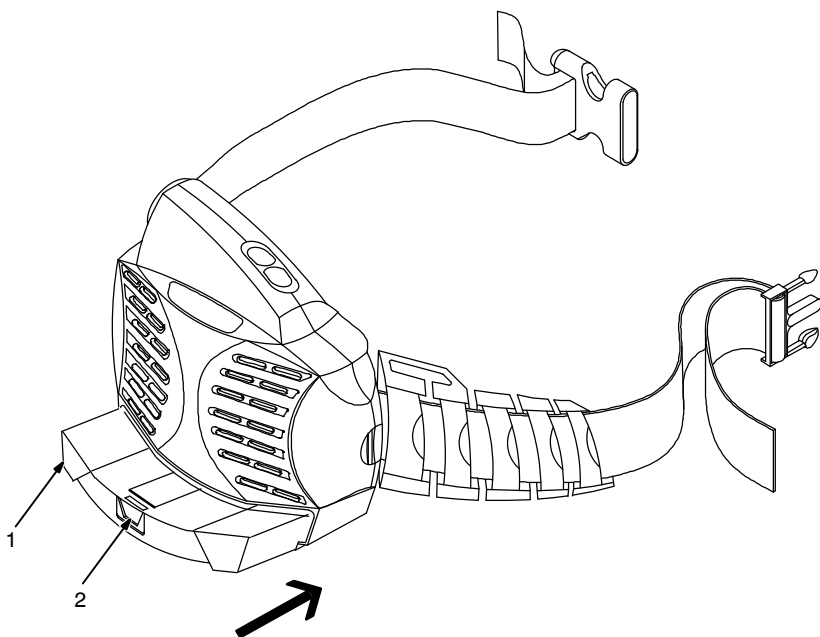
2-3. Installing The Battery



- 1 Battery
- 2 Battery Unlock Button

Slide battery into blower body until battery snaps into position.

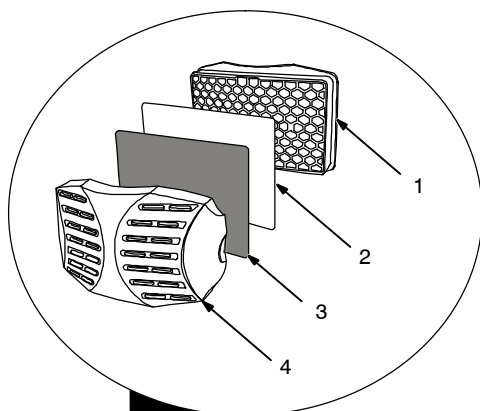
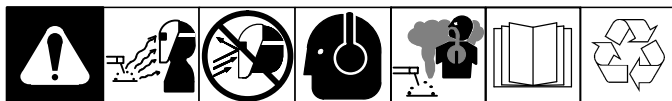
To remove battery, push battery unlock button down and pull battery from blower assembly.



Ref. 805 068

POWERED AIR PURIFYING RESPIRATOR

2-4. Installing The Air Filter



! Do not use the respirator without the spark guard screen, foam prefilter, and particulate (HEPA) filter installed.

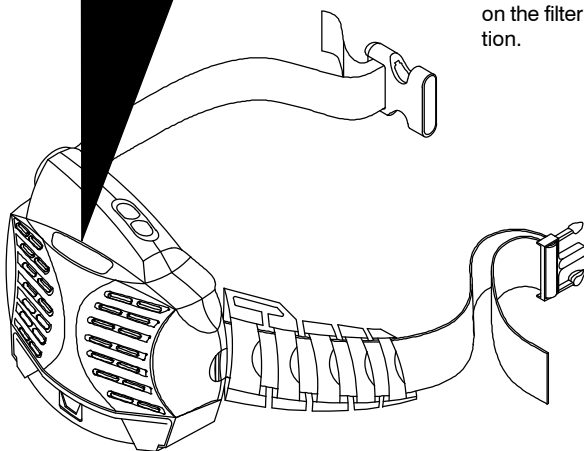
! Replace damaged or dirty air filters. Do not wash filters, clean with compressed air, or reuse dirty air filters.

 *Dispose of used filters at a designated collection facility.*

- 1 Particulate (HEPA) Filter
- 2 Foam Prefilter
- 3 Spark Guard Screen
- 4 Cover

Install the screen, prefilter, and particulate filter in cover exactly as shown.

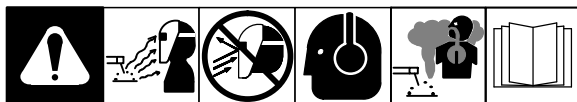
Install the filter assembly by sliding the tabs on the cover into the bracket on the blower body; push down on the filter until it "clicks" into position.



POWERED AIR PURIFYING RESPIRATOR

2-5. Attaching The Connecting Hose

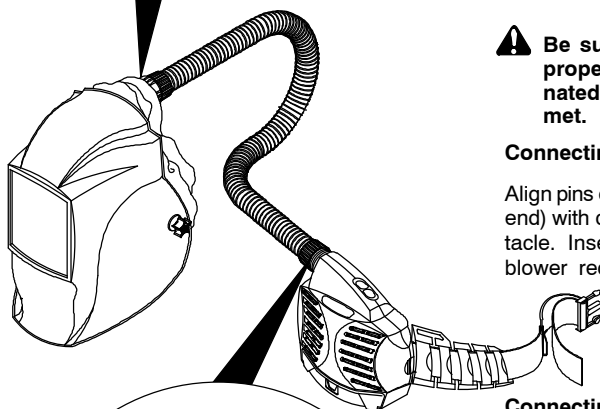
Ref. 805 068 / 805 098



Screw Connector

Tab Connector

OR



⚠ Be sure connecting hose is properly installed or contaminated air may enter the helmet.

Connecting Hose To Blower

Align pins on hose connector (blower end) with channels in blower receptacle. Insert hose connector into blower receptacle until snug and then turn connector 1/8 turn clockwise.

Connecting Hose To Helmets Equipped With Screw Connector

Insert hose connector (helmet end) into hood receptacle. Turn hose connector collar clockwise until tight.

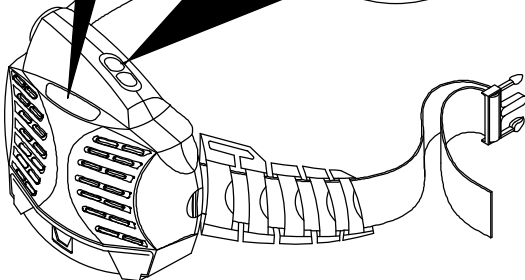
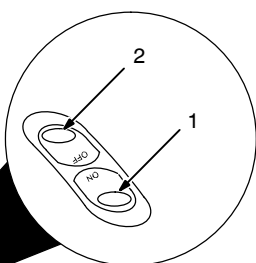
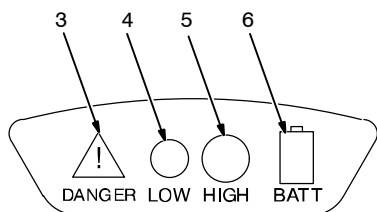
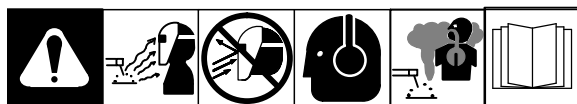
Connecting Hose To Helmets Equipped With Tab Connector

1 Locking Tab

Push hose connector (rectangular end) into helmet air inlet until hose locks in position. (Locking tab should be on outside of helmet air inlet.)

⚠ Do not insert hose locking tab into helmet inlet. Locking tab should be on outside of helmet air inlet.

2-6. Operating The Controls



⚠ Leave the contaminated area immediately if the Danger light goes On, the alarm sounds, or the blower vibrates. Do not remove the equipment until you are in a safe area.

- 1 On Button
- 2 Off Button
- 3 Danger Indicator
- 4 Low Speed Indicator
- 5 High Speed Indicator
- 6 Battery Level Indicator

Indicator lights are always red.

To Start: Press On button for 1–2 seconds until the blower starts. The Danger indicator lights and then goes out, the alarm sounds, and the blower vibrates momentarily.

The blower always starts at the low speed. Press the On button to switch between High and Low speeds.

To Stop: Press Off button for 2 – 3 seconds until the audible alarm and blower stop.

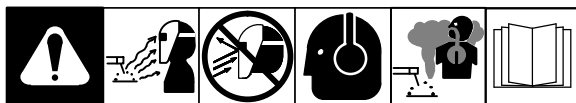
The Danger indicator light goes on, the alarm sounds, and the blower vibrates if battery power is low or air flow is reduced due to a dirty filter, blocked hose, or other problem. See Section 2-13, Troubleshooting.

The Battery Level indicator lights show the power remaining in the battery. When all three lights are on the battery is fully charged.

Ref 805 068

POWERED AIR PURIFYING RESPIRATOR

2-7. Testing Air Flow

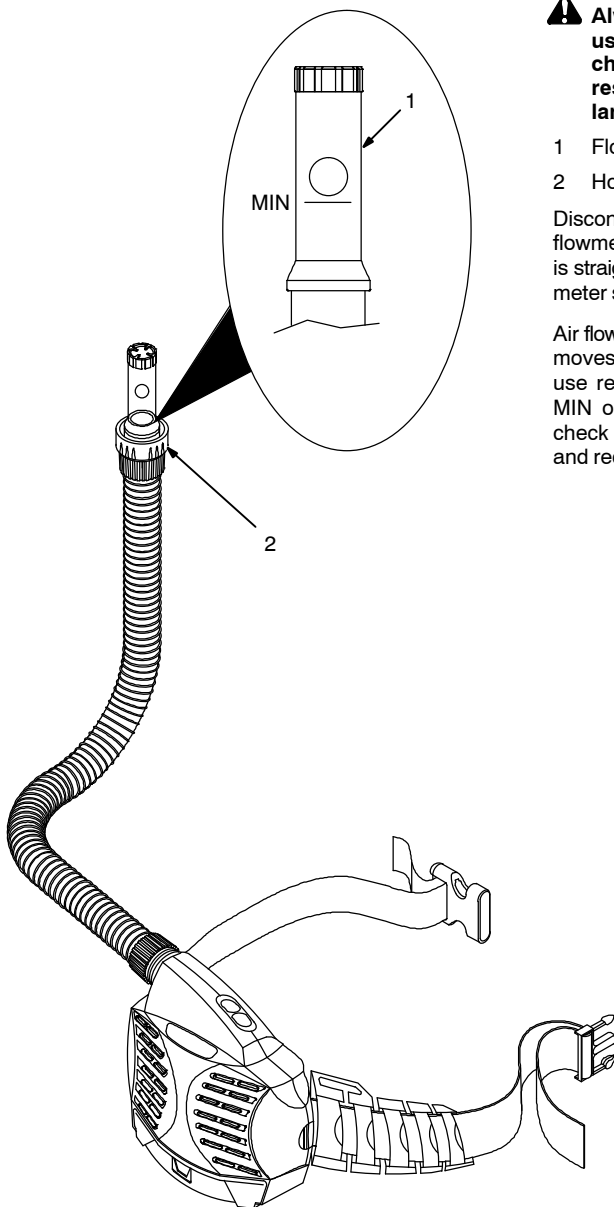


⚠ Always test air flow before using the respirator. Also check air flow each month if respirator is not used regularly.

- 1 Flowmeter
- 2 Hose Connector (Hood)

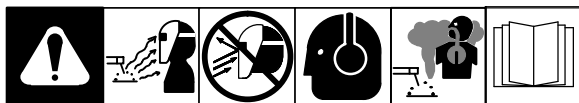
Disconnect hose from hood. Insert flowmeter into hose. Be sure hose is straight and untwisted. Hold flowmeter straight up and start blower.

Air flow is adequate if flowmeter ball moves above MIN mark. Do not use respirator if flowmeter reads MIN or below. If air flow is low, check battery and filter elements and recheck air flow.



POWERED AIR PURIFYING RESPIRATOR

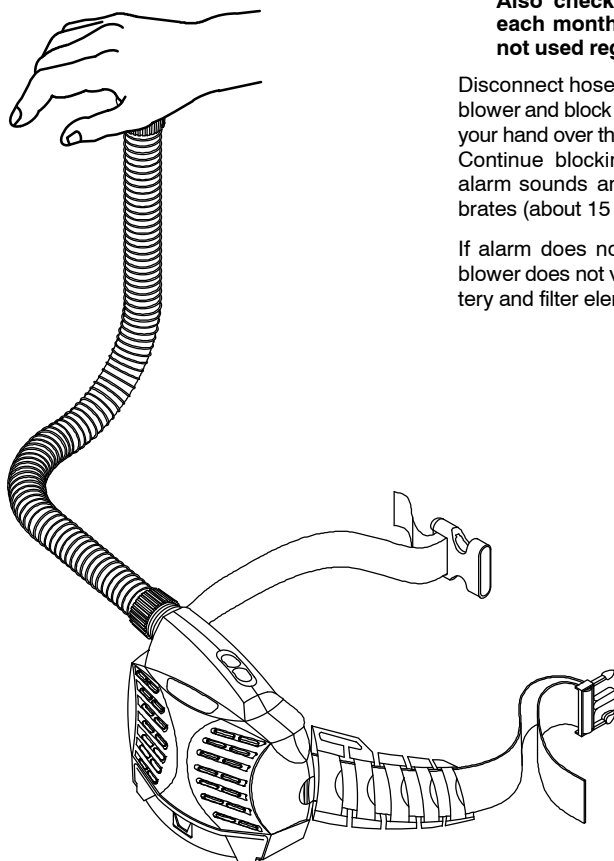
2-8. Testing Air Flow Alarm



⚠ Always test air flow alarm before using the respirator. Also check air flow alarm each month if respirator is not used regularly.

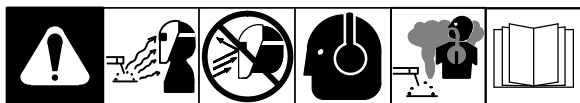
Disconnect hose from hood. Start blower and block air flow by placing your hand over the end of the hose. Continue blocking air flow until alarm sounds and the blower vibrates (about 15 to 20 seconds).

If alarm does not sound and the blower does not vibrate, check battery and filter element.



POWERED AIR PURIFYING RESPIRATOR

2-9. Installing Shoulder Strap

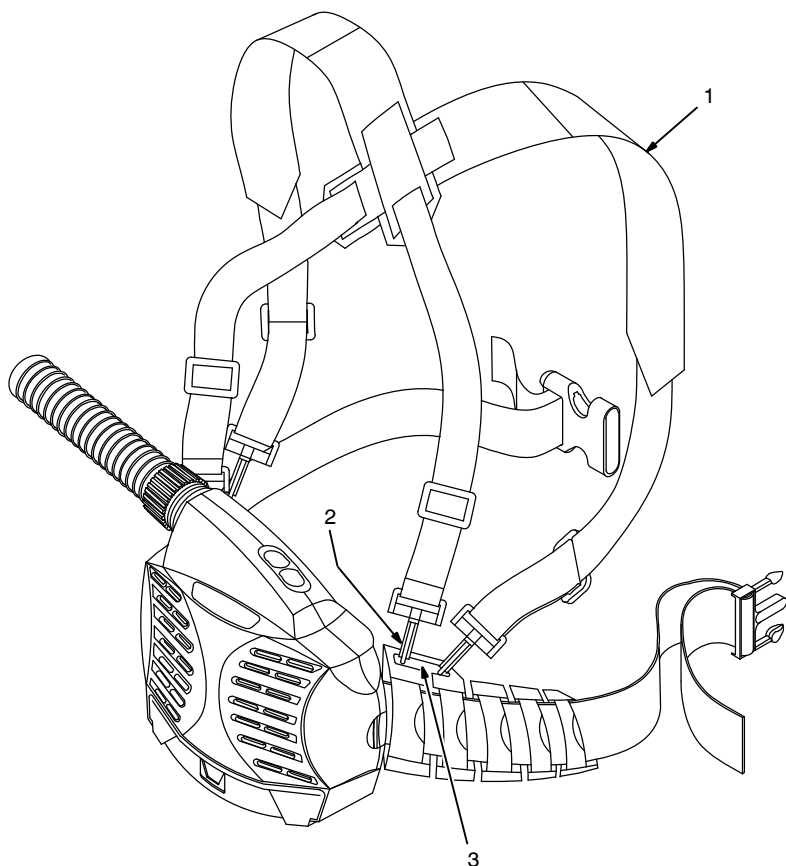


1 Shoulder Strap

2 Snap

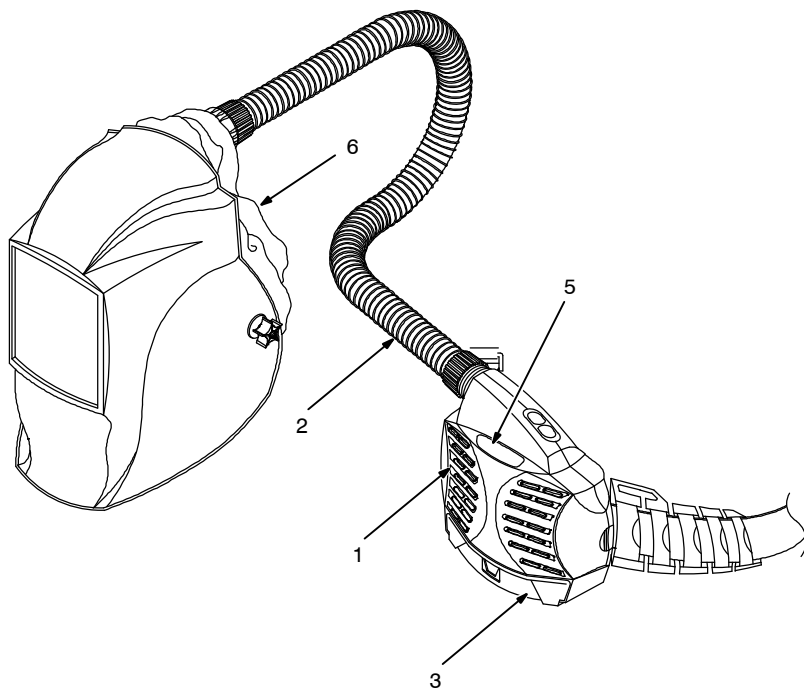
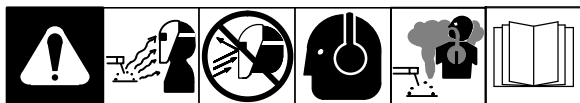
3 Link

Connect snaps on shoulder straps to links on belt.



POWERED AIR PURIFYING RESPIRATOR

2-10. Checking The Respirator Before Use



805 068

Before using the respirator, check the following items:

1 Air Filter Assembly

Verify the air filter is suitable for the application and is NIOSH-approved. Also be sure the filter is undamaged, properly assembled, and securely connected to the blower assembly.

2 Breathing Tube

Be sure the tube is undamaged and properly connected to the blower assembly and hood.

3 Battery

Verify the battery is fully charged and securely connected to the blower assembly.

4 Air Flow (Not Shown)

Test air flow according to Section 2-7.

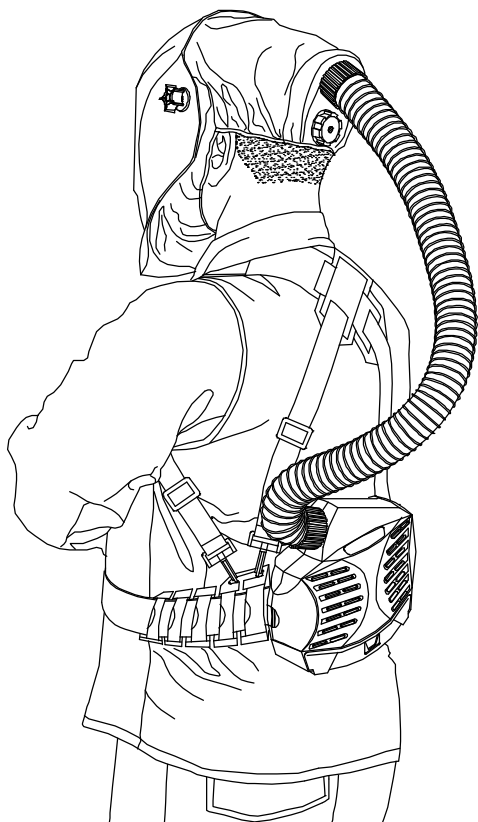
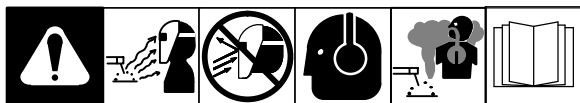
5 Air flow Alarm

Turn on blower assembly and check for audible, visual, and vibratory alarms (see Sections 2-6 and 2-8). See Troubleshooting section if alarms go on at any other time (Section 2-13).

6 Hood

Inspect the hood and replace if damaged. See Troubleshooting (Section 2-13) if air is not being supplied to hood.

2-11. Putting On The Respirator



⚠ Do not enter a hazardous area until you are sure the respirator equipment is correctly assembled, working properly, and properly worn.

⚠ Leave the contaminated area immediately if the Danger light goes On, the alarm sounds, or the blower vibrates. Do not remove the equipment until you are in a safe area.

📖 See Parts List in Section 4 for optional belt extension.

Place blower assembly against lower back with hose extending upwards. Slide straps over shoulders and fasten belt around waist. Adjust straps and belt so unit rests comfortably against lower back.

Put on helmet and adjust helmet so helmet fits snugly on head. Tighten hood drawstring to establish a tight seal around head.

POWERED AIR PURIFYING RESPIRATOR

2-12. Maintenance And Storage

 **Replace damaged or dirty air filters. Do not wash filters, clean with compressed air, or reuse dirty air filters.**

 **Never use solvents or abrasive cleaning solutions to clean the respirator. Keep water and other fluids out of blower assembly.**

 *Maintain accurate records of filter replacement and respirator maintenance.*

For best performance clean the equipment after each use. Use a soft cloth dampened with a mild soap and water solution to wipe all external surfaces clean. Allow to air dry.

Product usage, workplace contamination levels, and other factors affect the life of the filter elements. Replace filter elements if air flow is reduced due to a dirty filter (see Section 2-4) and according to the filter change schedule established by your Safety Director and an Industrial Hygienist.

Inspect connecting hose and replace if damaged or if inside of tube is dirty.

If the respirator will not be used for an extended period, remove the filter and battery and store them in a clean, dry, cool place free of solvent-based vapors.

2-13. Respirator Troubleshooting



Trouble	Remedy
Blower does not supply air to hood.	Press On button.
	Dead battery; recharge battery (see Section 2-2).
	Verify battery is properly connected to blower body.
	Remove blockage from blower outlet and hose.
Blower cannot be turned Off.	Press Off button for two to three seconds.
Blower runs for short time even though battery is fully charged.	Be sure battery is properly connected to battery charger.
	Replace battery.
	Replace charger.
Battery warning light is On and alarm sounds.	Continue wearing the respirator and leave the contaminated area immediately. Charge or replace the battery. The blower will operate for about 20 minutes after the warning light goes on.
	Have Safety Director and an Industrial Hygienist determine if you are using the proper equipment for the work environment.

POWERED AIR PURIFYING RESPIRATOR

Battery run time is too short.	Replace battery.
	Check air filter and replace if necessary (see Sections 2-4 and 2-7). A clogged air filter element reduces battery life.
Danger light is On, alarm sounds or blower vibrates.	Continue wearing the respirator and leave the contaminated area immediately. Check blower air flow (see Sections 2-4 and 2-7). Remove blockage from blower outlet and/or hose. If alarm sounds or blower vibrates continuously, contact a Factory Authorized Service Agent.
	Remove packaging from air filter.
	Have Safety Director and an Industrial Hygienist determine if you are using the proper equipment for the work environment.
Air supplied to hood smells and tastes unusual; eyes and throat irritation.	Continue wearing the respirator and leave the contaminated area immediately. Check contamination level of filter, and replace filter if necessary.
	Check hose connections to blower and hood.
	Verify spark guard, prefilter, and particulate (HEPA) filter are installed in blower assembly.
	Have Safety Director and an Industrial Hygienist determine if you are using the proper equipment for the work environment.
Blower supplies insufficient air to hood.	Check hose connections to blower and hood.
	Remove blockage from blower outlet and/or hose.
	Check air filter and replace if necessary (see Sections 2-4 and 2-7). A clogged air filter element reduces battery life.

SECTION 3 – AUTO-DARKENING HELMET

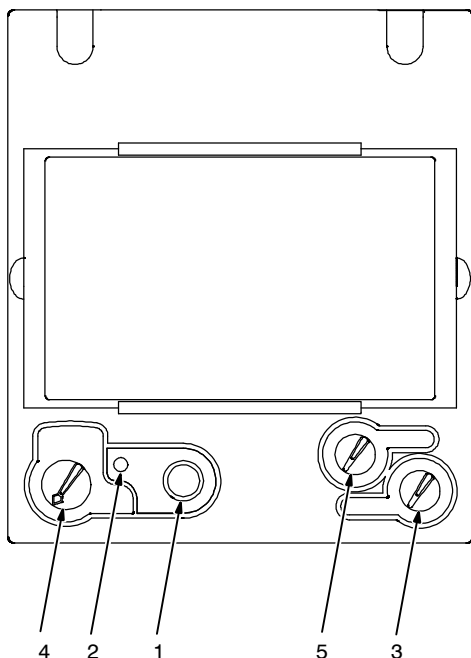
 See Section 2 for information on the powered air-purifying respirator (PAPR) assembly.

3-1. Specifications

Viewing Field	97 x 60mm/3.81 x 2.62 in
Reaction Time	0.0000500sec (1/20,000)
Available Shades	Darkened State: No. 8 – No. 13 / Light State: No. 3 provides continuous UV and IR protection
Sensitivity/Grind Mode Control	Adjusts for varying ambient light and welding arc
Delay Control	Slows lens dark-to-light state between 0.1 and 1.0 seconds
Automatic Power Off	Shuts lens Off 15–20 minutes after last arc is struck
Low Battery Indicator	Red LED light illuminates to indicate 2–3 days remaining battery life
Power Supply	CR2450 Lithium Batteries (Miller Part No. 217 043)
Sensors	Independent/Redundant (Four)
Operating Temperature	14°F to 131°F / –10°C to +55°C  When stored in extremely cold temperatures, warm helmet to ambient temperature before welding.
Storage Temperature	–4°F to 158°F / –20°C to +70°C  When stored in extremely cold temperatures, warm helmet to ambient temperature before welding.
Total Weight	510.3g (1lb 2oz.)
Standards	ANSI Z87.1+(2003) and DIN/CSA/TUV
Warranty	2 years from date of purchase (see Section 5)

AUTO-DARKENING HELMET

3-2. Helmet Controls

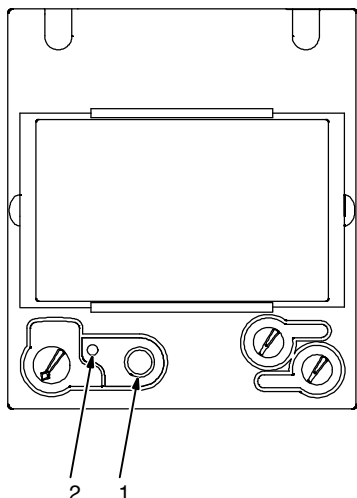
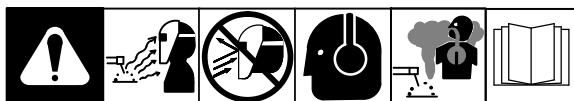


- 1 Reset Button (See Section 3-3)
- 2 Low Battery Indicator (See Section 3-3)
- 3 Variable Shade Control (See Section 3-5)
- 4 Sensitivity Control (See Section 3-6)
- 5 Lens Delay Control (See Section 3-4)

OTOS

AUTO-DARKENING HELMET

3-3. Reset Button And Low Battery Indicator



☞ *The auto-darkening lens turns on (darkens) automatically when welding begins and turns off 15 – 20 minutes after welding stops.*

1 Reset Button

Press Reset button to check if the lens is working properly.

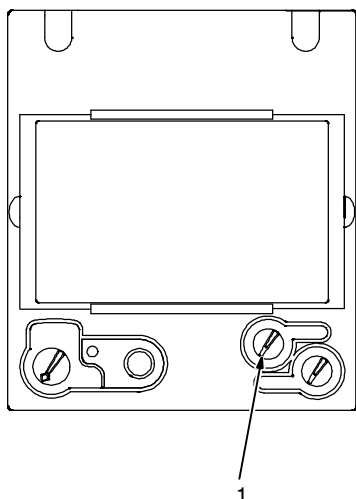
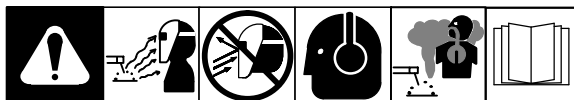
When the Reset button is pressed, the lens should darken twice and return to the clear state. Do not use the helmet if the lens does not function as described. (See Section 3-13, Trouble-shooting.)

2 Low Battery Indicator

The low battery indicator lights when 2–3 days of battery life remain.

If battery power is low, replace with CR2450 lithium batteries (2 required) (Miller Part No. 217 043) (see Section 3-10).

3-4. Lens Delay Control



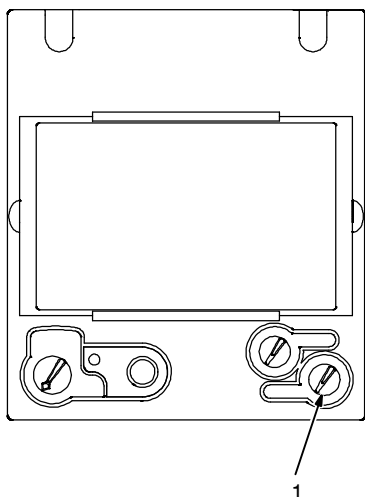
1 Lens Delay Control

The lens delay control is used to adjust the time for the lens to switch to the clear state after welding.

The delay is particularly useful in eliminating bright after-rays present in higher amperage applications where the molten puddle remains bright momentarily after welding. Lens delay adjusts from min (0.10 second) to max (1.0 second.).

AUTO-DARKENING HELMET

3-5. Variable Shade Control (No. 8 – 13)



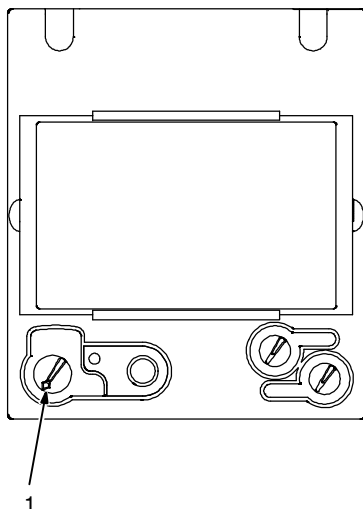
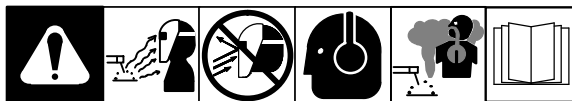
1 Variable Shade Control (No. 8 – 13)

Use the control to adjust the lens shade in the darkened state. Use the table below to select proper shade control setting based on your welding process.

Start at shade 12 and adjust lighter to suit the welding application and your personal preference.

Application Welding	Arc Current in Amperes	Protective Shade No.
Stick Electrodes	Less than 40	9
	40–80	10
	80–175	11
	175–300	12
	300–500	13
MIG	Less than 100	10
	100–175	11
	175–300	12
	300–500	13
Gas Tungsten Arc Welding (TIG)	Less than 50	10
	50–100	11
	100–200	12
	200–400	13
Air Carbon	Less than 500	12
	500–700	13
Plasma Arc Cutting	60–150	11
	150–250	12
	250–400	13
Plasma Arc Welding	Less than 50	9
	50–200	10
	200–400	12

3-6. Sensitivity Control



1 Sensitivity Control

Weld Mode

Use control to make the lens more responsive to different light levels in various welding processes. **Use a Mid-Range or 30–50% sensitivity setting for most applications.**

It may be necessary to adjust helmet sensitivity to accommodate different lighting conditions or if lens is flashing On and Off. Adjust helmet sensitivity as follows:

 *Adjust helmet sensitivity in lighting conditions helmet will be used in.*

- Turn sensitivity control to lowest setting.
- Press Reset button to turn helmet On. Helmet lens will darken twice and then clear.
- Face the helmet in the direction of use, exposing it to the surrounding light conditions.
- Gradually turn sensitivity setting clockwise until the lens darkens, then turn sensitivity control counterclockwise until slightly past setting where lens clears. Helmet is ready for use. Slight readjustment may be necessary for certain applications or if lens is flashing on and off.

Grind Mode

 *Do not weld in the Grind mode; the lens will not darken.*

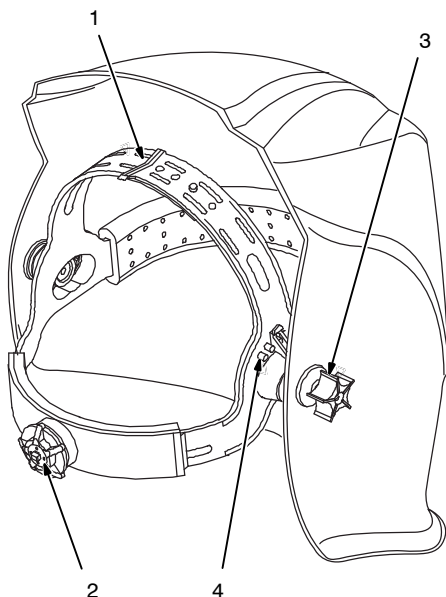
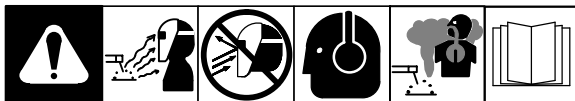
To use the Grind mode, turn the Sensitivity control clockwise to the far right position (Grind). To resume welding, return the control to the desired sensitivity setting.

Recommended Sensitivity Settings

Stick Electrode	Mid-Range
Short Circuiting (MIG)	Low/Mid-Range
Pulsed & Spray (MIG)	Mid-Range
Gas Tungsten Arc (TIG)	Mid/High-Range
Plasma Arc Cutting/Welding	Low/Mid-Range
Grind Mode	Grind Position – Far Right (Clockwise)

AUTO-DARKENING HELMET

3-7. Adjusting Headgear On Standard Models



 There are four headgear adjustments: headgear top, tightness, angle adjustment, and distance adjustment.

1 Headgear Top

Adjusts headgear for proper depth on the head to ensure correct balance and stability.

2 Headgear Tightness

To adjust, push in the adjusting knob located on the back of the headgear and turn left or right to desired tightness.

3 Distance Adjustment

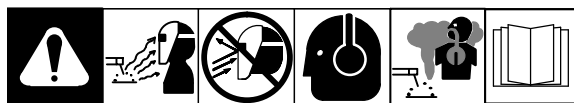
Adjusts the distance between the face and the lens. To adjust, loosen both outside tension knobs and press inward to free from adjustment slots. Move forward or back to desired position and retighten. (Both sides must be equally positioned for proper vision.)

4 Angle Adjustment

Four pins on the right side of the headband top provide adjustment for the forward tilt of the helmet. To adjust, loosen the right outside tension adjustment knob then lift on the control arm tab and move it to the desired position. Retighten tension adjustment knob.

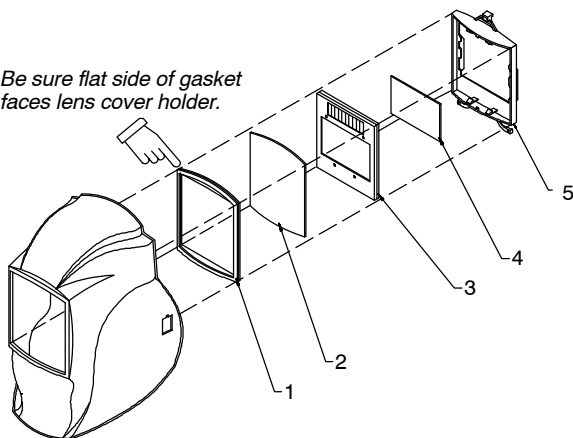
AUTO-DARKENING HELMET

3-8. Replacing The Lens Covers On Standard Elite Helmets



⚠ Never use the auto-darkening lens without the inside and outside lens covers properly installed. Welding spatter will damage the auto-darkening lens and void the warranty.

Be sure flat side of gasket faces lens cover holder.



- 1 Front Lens Gasket
- 2 Outside Lens Cover
- 3 Lens Assembly
- 4 Inside Lens Cover
- 5 Lens Frame

Remove the lens assembly to remove either lens cover.

To remove the lens assembly, push down on the helmet bottom retaining arms and push the retaining clips toward the outside of the helmet. Lift up on the assembly and pull free of the helmet.

Outside Lens Cover

Remove the outside lens cover by pushing into the helmet. Remove the rubber lens gasket and install on the new lens cover. Reinstall the lens assembly.

ⓘ *Be sure the flat side of lens cover gasket faces the lens cover holder.*

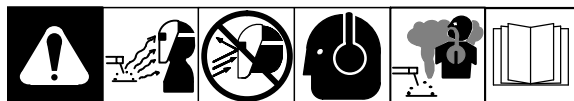
Inside Lens Cover

To replace the inside lens cover, remove the lens assembly from the lens frame by pushing up on the top two retaining tabs while gently pushing the lens free.

Remove the lens cover by sliding it out of either side. Replace with the new cover lens and re-install the assembly in the helmet.

AUTO-DARKENING HELMET

3-9. Replacing Grinding Shield On Titanium 9400i Helmet



⚠ Never use the auto-darkening lens without the inside and outside lens covers properly installed. Welding spatter will damage the auto-darkening lens and void the warranty.

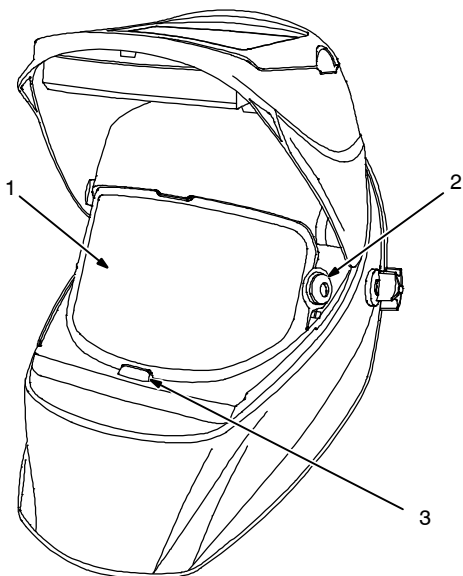
- 1 Grinding Shield
- 2 Retaining Clip
- 3 Tab

Rotate both retaining clips to the Open position.

Gently push shield toward bottom tab and remove shield from helmet.

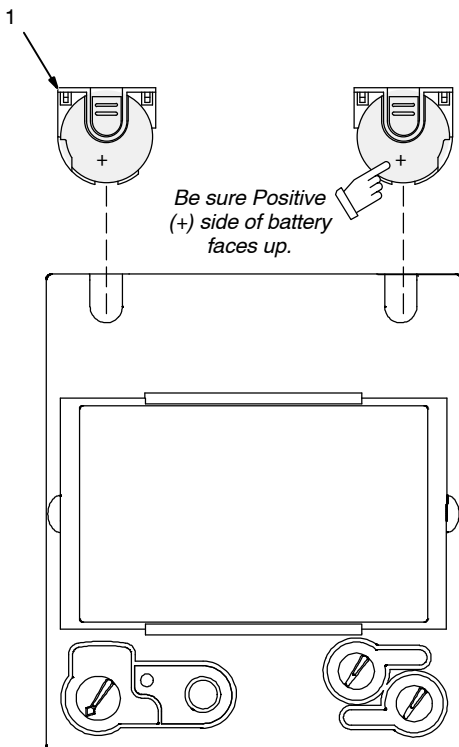
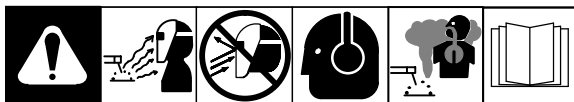
Remove retaining clips from shield. Install clips in same location on new shield. (Retaining clips are not interchangeable.)

Install new shield in helmet and rotate clips to the Lock position.



AUTO-DARKENING HELMET

3-10. Replacing The Battery



To replace the batteries, remove the auto-darkening lens assembly (see Section 3-8).

1 Battery Tray

After removing the lens assembly, slide the battery holding trays out and remove the old batteries.

Replace with CR2450 lithium type batteries (2 required) or equivalent (Miller Part No. 217043).

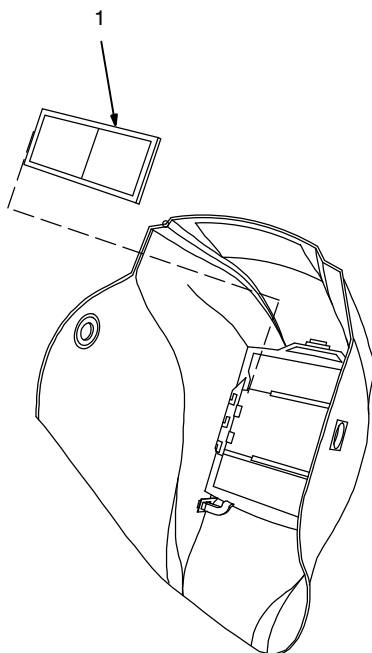
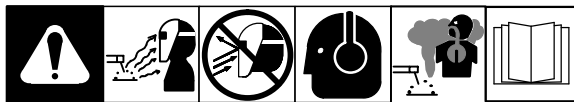
 *Be sure Positive (+) side of the battery faces up (toward inside of helmet).*

Reinstall the battery trays. To test, press the Reset button. The lens should flash dark twice. Reinstall the lens assembly.

 *Left and right battery trays are not interchangeable. The auto-darkening helmet will not work if battery trays are installed on the wrong sides.*

AUTO-DARKENING HELMET

3-11. Installing Optional Magnifying Lens



1 Optional Magnifying Lens

Starting at the bottom, slide magnifying lens into the helmet retaining brackets. Align the magnifying lens with the auto-darkening lens assembly.

- Remove lens holding frame (with auto-darkening lens) from helmet shell.
- Remove auto-darkening lens from lens holder.
- Position lens holder with magnifying lens holding tabs facing toward you. From the bottom up, slide magnifying lens into position. (Slide magnifying lens up or down slightly as desired.)
- Reinstall the auto-darkening lens in the lens holder.
- Reverse procedure to remove magnifying lens.

 To prevent lens fogging, install flat side of magnifying lens toward auto-darkening lens.

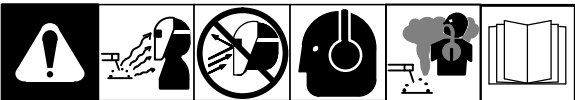
804 818

3-12. Maintenance

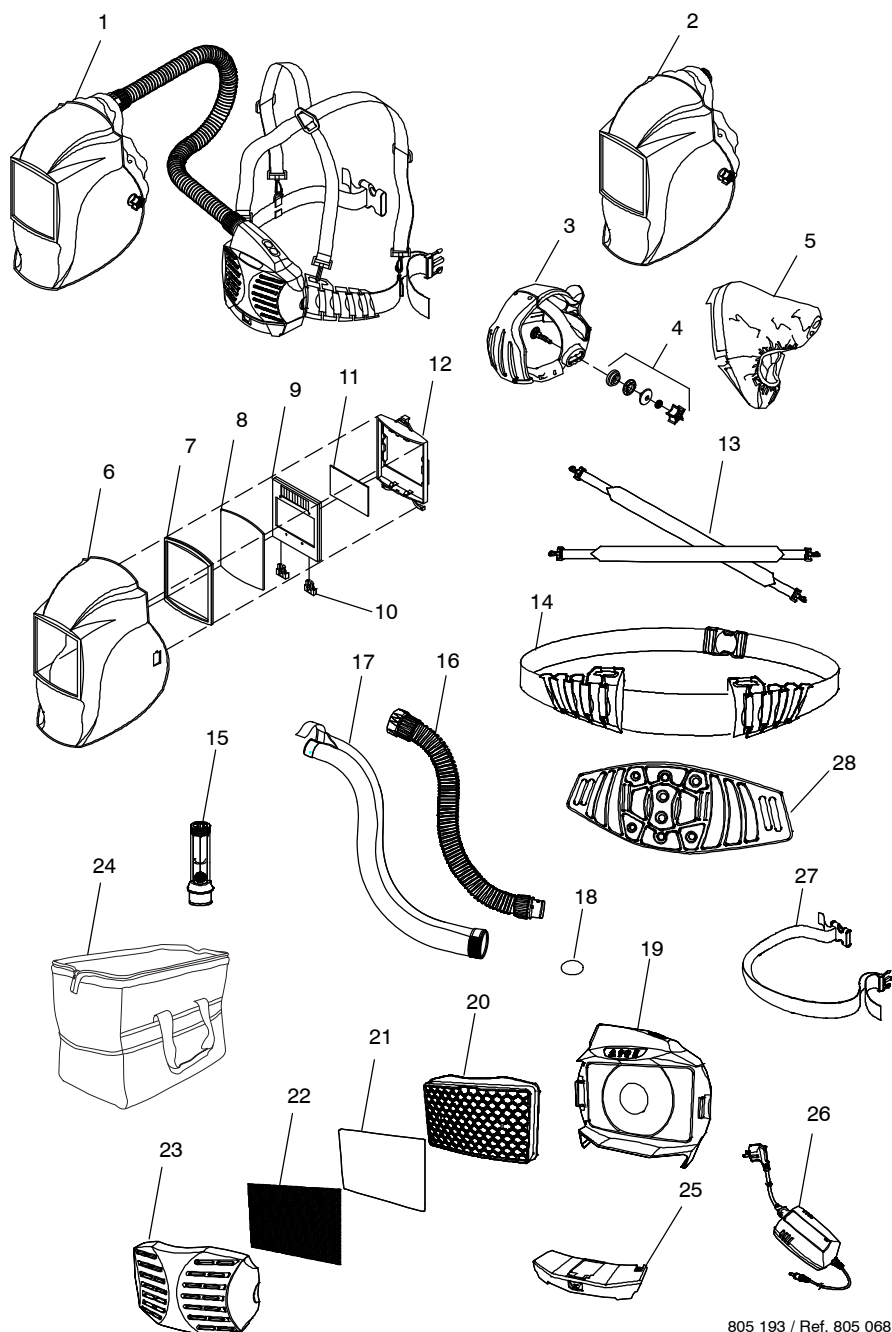
NOTICE – Never use solvents or abrasive cleaning detergents. Do not immerse the lens assembly in water.

The helmet requires little maintenance. However, for best performance clean after each use. Using a soft cloth dampened with a mild soap and water solution, wipe the cover lenses clean. Allow to air dry. Occasionally, the filter lens and sensors should be cleaned by gently wiping with a soft, dry cloth.

3-13. Troubleshooting

					
Trouble		Remedy			
Auto lens not ON – auto-lens will not darken momentarily when the Reset button is pressed.		Check batteries and verify they are in good condition and installed properly. Also, check battery surfaces and contacts and clean if necessary. Check battery for proper contact and gently adjust contact points if necessary. This is particularly important if the helmet has been dropped. Verify left and right battery trays are installed on the correct sides.			
Not switching – auto-lens stays light and will not darken when welding.		Stop welding immediately: Press the Reset button if lens is Auto-On type. If lens is Manual-On type, make sure the lens is turned On. If power is on, review the sensitivity recommendations and adjust sensitivity. Clean lens cover and sensors of any obstructions. Make sure the sensors are facing the arc; angles of 45° or more may not allow the arc light to reach the sensors.			
Not Switching – auto-lens stays dark after the weld arc is extinguished, or the auto-lens stays dark when no arc is present.		Fine-tune the sensitivity setting by making small adjustments to the control by turning it toward the “min” setting. In extreme light conditions, it may be necessary to reduce the surrounding light levels.			
Sections of the auto-lens are not going dark, distinct lines separate the light and dark areas.		Stop welding immediately: The auto-lens may be cracked which can be caused by the impact of dropping the helmet. Weld spatter on the auto lens may also cause cracking. (The lens may need to be replaced; most cracked lenses are not covered by warranty).			
Switching or Flickering – the auto-lens darkens then lightens while the welding arc is present.		Review the sensitivity setting recommendations and increase the sensitivity if possible. Be sure the arc sensors are not being blocked from direct access to the arc light. Check the lens cover for dirt and spatter that may be blocking the arc sensors. Increasing Lens Delay 0.1 – 0.3 second may also reduce switching.			
Inconsistent or lighter auto-lens shading in the dark-state, noticeable on the outside edges and corners.		Referred to as an angle of view effect, auto-darkening lenses have an optimum viewing angle. The optimum viewing angle is perpendicular or 90° to the surface of the auto-lens. When that angle of view varies in the dark-state, welders may notice slightly lighter areas at the outside edges and the corners of the lens. This is normal and does not represent any health or safety hazard. This effect may also be more noticeable in applications where magnifying lenses are used.			

SECTION 4 – PARTS LIST

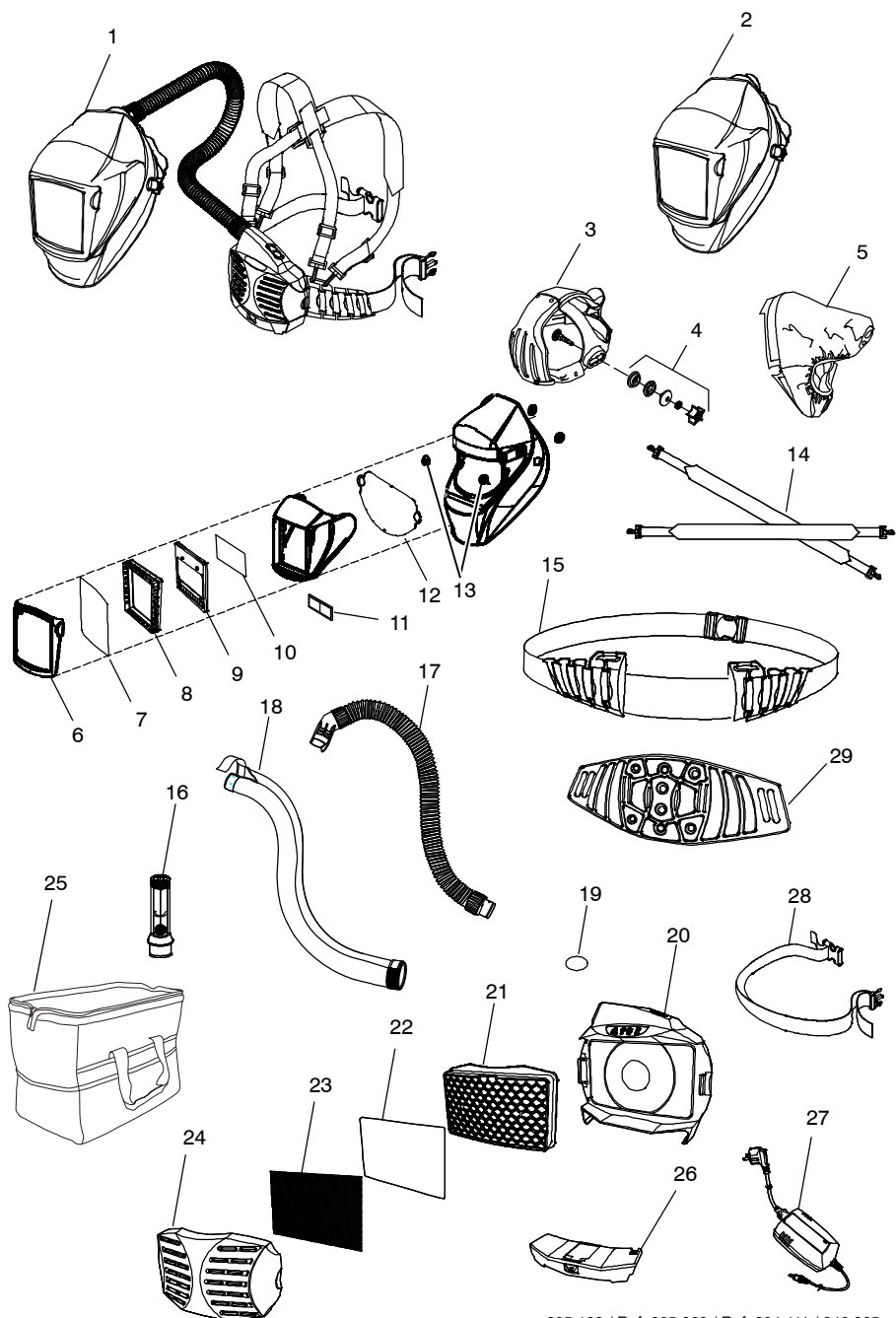


805 193 / Ref. 805 068

Figure 4-1. Powered Air Purifying Respirator (PAPR) w/Standard Elite Helmet

Item No.	Part No.	Description	Quantity
Figure 4-1. Powered Air Purifying Respirator (PAPR) w/Standard Elite Helmet			
1	235671	PAPR (Complete System)	1
	237811	PAPR (System Without Auto-Dark Lens Assembly)	1
2	237708	Helmet Assembly (Includes Headgear And Head Seal)	1
3	235685	Headgear (Includes)	1
	079975	Replacement O-rings For Kit 770 248 (5 Per Pkg.)	1
	770249	Fabric Headband	1
4	770248	Adjustment Angle/Stop Hardware Kit (with O-rings)	1
5	235684	Head Seal (Hood)	1
6	237451	Helmet Shell, Black Elite w/Velcro® Fastening	1
7	216337	Gasket, Front Lens	1
8	216326	Outside Lens Cover (4-11/16 X 5-5/8) (5 Per Pkg.)	1
9	216328	Auto-darkening Lens Assembly	1
10	216339	Battery Tray Kit (Left/Right)	1
	217043	Battery, (Lens) Lithium CR2450	2
11	216327	Inside Lens Cover (4-1/4 X 2-1/2) (5 Per Pkg.)	1
12	216335	Frame, Lens	1
	◆ 212235	Lens, 0.75 Magnification (Not Shown)	1
	◆ 212236	Lens, 1.00 Magnification (Not Shown)	1
	◆ 212237	Lens, 1.25 Magnification (Not Shown)	1
	◆ 212238	Lens, 1.50 Magnification (Not Shown)	1
	◆ 212239	Lens, 1.75 Magnification (Not Shown)	1
	◆ 212240	Lens, 2.00 Magnification (Not Shown)	1
	◆ 212241	Lens, 2.25 Magnification (Not Shown)	1
	◆ 212242	Lens, 2.50 Magnification (Not Shown)	1
13	235680	Shoulder Straps	1
14	235679	Belt	1
15	235683	Flowmeter	1
16	235681	Hose Assembly	1
17	239571	Cover, Hose	1
18	237452	O-Ring, Breathing Tube	1
19	235672	Blower Assembly	1
20	235673-2	Filter, Particulate (HEPA) (2-Pack)	1
	235673-6	Filter, Particulate (HEPA) (6-Pack)	1
	235673-36	Filter, Particulate (HEPA) (36-Pack)	1
21	235674	Filter, Prefilter (Foam)	1
22	235676	Spark Guard	1
23	235677	Filter Cover	1
24	228028	Bag	1
25	244131	Battery, Blower	1
26	244132	Charger	1
27	◆ 244151	Belt Extension	1
28	239636	Belt Pad (PAPR)	1

◆ Optional



805 193 / Ref. 805 068 / Ref. 804 111 / 242 385

**Figure 4-2. Powered Air Purifying Respirator (PAPR)
w/Titanium 9400i Helmet**

Item No.	Part No.	Description	Quantity
Figure 4-2. Powered Air Purifying Respirator (PAPR) w/Titanium 9400i Helmet			
1	247531	PAPR (Complete System)	1
	247532	PAPR (System Without Auto-Dark Lens Assembly)	1
2	247471	Helmet Assembly (Includes Headgear And Head Seal)	1
3	247472	Headgear Gray (Includes)	1
4	*770248	Kit, Adjustment Angle/Stop Hardware	1
	770249	Headband, Fabric	1
	079975	Replacement O-rings For Kit 770 248 (5 Per Pkg.)	1
5	247473	Head Seal (Hood)	1
6	245815	Lens Holder, Front (Titanium)	1
7	216326	Lens Cover, Outside (4-11/16 X 5-5/8) (5 Per Pkg.)	1
8	241977	Gasket, Lens Assembly	1
9	245817	Lens Assembly, Auto-Darkening	1
	217043	Battery, Lithium (CR2450)	2
10	216327	Lens Cover, Inside 4-1/4 X 2-1/2 (5 Per Pkg.)	1
11	◆212235	Lens, 0.75 Magnification	1
	◆212236	Lens, 1.00 Magnification	1
	◆212237	Lens, 1.25 Magnification	1
	◆212238	Lens, 1.50 Magnification	1
	◆212239	Lens, 1.75 Magnification	1
	◆212240	Lens, 2.00 Magnification	1
	◆212241	Lens, 2.25 Magnification	1
	◆212242	Lens, 2.50 Magnification	1
12	245818	Lens, Grinding Shield	1
13	245819	Clip, Retaining Grinding Shield	1
14	235680	Shoulder Straps	1
15	235679	Belt	1
16	245219	Flowmeter	1
17	247474	Hose Assembly	1
18	239571	Cover, Hose	1
19	237452	O-Ring, Breathing Tube	1
20	235672	Blower Assembly	1
21	235673-2	Filter, Particulate (HEPA) (2-Pack)	1
	235673-6	Filter, Particulate (HEPA) (6-Pack)	1
	235673-36	Filter, Particulate (HEPA) (36-Pack)	1
22	235674	Filter, Prefilter (Foam)	1
23	235676	Spark Guard	1
24	235677	Filter Cover	1
25	228028	Bag	1
26	244131	Battery, Blower	1
27	244132	Charger	1
28	◆244151	Belt Extension	1
29	239636	Belt Pad (PAPR)	1

◆ Optional

SECTION 5 – LIMITED WARRANTY

LIMITED WARRANTY – Subject to the terms and conditions below. Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that the new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Miller Elite and Titanium Series auto-darkening lens helmets are warranted for two years from the date of purchase. The blower assembly is warranted for one year from the date of purchase. The battery is warranted for six months from the date of purchase. *Proof of purchase is required for warranty transactions so it is imperative that a copy of the original invoice or sales receipt be retained.*

For warranty transactions, contact your Miller Distributor.

Effective January 1, 2011



Visit our website at
www.MillerWelds.com



Miller Electric Mfg. Co.
An Illinois Tool Works Company
1635 West Spencer Street
Appleton, WI 54914 USA